to collect together typical collections of all materials of economic value belonging to the animal, vegetable, and mineral kingdoms, from the raw material through the various stages of manufacture, to the final product or finished article ready for use. It is intended that the following shall be more or less completely represented:—Animal products; vegetable products; waste products; foods; economic entomology; economic geological specimens; educational apparatus and appliances; sanitary and hygienic appliances and systems; mining, engineering, and machinery; agricultural tools, appliances, and machinery; also soils, manures, &c.; models, drawings, and descriptions of patents; ethnological specimens; examples of historical furniture and of artistic workmanship in iron and other metals; photographs, electrotype, plaster, and other reproductions of examples of art workmanship where originals are not to be obtained. Exhibition catalogues, trade journals, price lists, and descriptions of new processes or industries. The acting secretary is Mr. Charles R. Buckland.

WE have received the abstract of *Transactions* of the Anthropological Society of Washington for the first two years of its existence, ending January, 1881. It contains brief notices of the meetings of the Society, the papers read, as might be expected, relating mostly to American Indians. A paper by Col. Mallory, "On the Comparative Mythology of the Two Indias (Asia and America)" shows that many resemblances exist between them, arising solely, however, from the efforts of two quite distinct primitive peoples to interpret the same natural phenomena. Prof. Gill deals with the Zoological Relations of Man. The principal papers, however, are the annual addresses of the president, Mr. J. W. Powell, on the Evolution of Language, as Exhibited in the Specialisation of the Grammatic Processes, the Differentiation of the Parts of Speech, and the Integration of the Sentence, from a Study of Indian Languages; and on Limitations to the Use of Anthropological Data. Mr. Powell has also a long paper on "Wyandot Government—a Short Study of Tribal Society."

WE have received a long letter from Mr. Gerald Massey on our review of his "Book of the Beginnings," which we regret we are unable to print. We should state, however, that the word *bottle*, p. 49, col. 1, line 17 from bottom, was a misprint for *beetle;* and the following extract from Mr. Massey's work (vol. i. p. 145) will show the sense in which he quoted Prof. Max Müller:—"If the first man were called in Sanskrit Adima, and in Hebrew Adam, and if the two were really the same word, then Hebrew and Sanskrit could not be members of two different families of speech, or we should be driven to admit that Adam was borrowed by the Jews from the Hindus, for it is in Sanskrit only that Adima means the first, whereas in Hebrew it has no such meaning."—(Quoted from Max Müller's "Science of Religion," p. 302).

THE additions to the Zoological Society's Gardens during the past week include a Chacma Baboon (*Cynocephalus porcarius* ♀) from South Africa, presented by Mrs. Findlay; a Common Marmoset (*Hapale jacchus*), a Black-eared Marmoset (*Hapale penicillata*) from South-East Brazil, presented by Mr. C. Stewart; a Two-spotted Paradoxure (*Nandinia binotata* ♀) from West Africa, presented by Mr. W. H. Hart; a Bennett's Gazelle (*Gazella bennetti*) from Afghanistan, presented by Brigadier-General Tanner; a Globose Curassow (*Crax globicera*) from Central America, presented by Mr. Allan Lambert; a Slow-worm (*Anguis fragilis*), British, presented by Mr. G. Mengee; three Peacock Pheasants (*Polyplectron chinquis* ♂ ♂ ♀) from British Burmah, six Nuthatches (*Sitta cæsia*), British, deposited; two Ring-necked Pheasants (*Phasianus torquatus* ♂ ♀) from China, two Swinhoe's Pheasants (*Euplocamus swinhoii* ♂ ♀) from Formosa, four Chilian Pintails (*Dafila spinicauda*) from Antarctic America, an Antarctic Skua (*Stercorarius antarcticus*) from the Antarctic Seas, a Dominican Gull (*Larus dominicanus*) from the Falkland Islands, a White-marked Duck (*Anas specularis*) from the Straits of Magellan, an African Wild Ass (*Equus tæniopus* ♂) from Abyssinia, purchased; a Cashmere Shawl Goat (*Capra hircus*), a Mouflon (*Ovis musimon* ♀), born in the Gardens; three Variegated Sheldrakes (*Tadorna variegata*) bred in the Gardens.

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## *OUR ASTRONOMICAL COLUMN*

A NEW VARIABLE STAR.—Prof. Julius Schmidt publishes an account of his observation of a star of from 8m. to 9m. in Canis Minor on April 1, which had not been remarked as late as March 28, and of which not a trace was visible on the following night. On November 25, 1879, Mr. Baxendell discovered a star in Canis Minor of about 8·8m., and of a decided orange colour, where the *Durchmusterung* showed no star, which gradually diminished, until on January 11, 1880, it was estimated 9·6. Prof. Schmidt gives the position of this star from observations at Athens and at Dunecht, with the places of two of Bessel's stars as follows for 1880·0:—

| | | R.A.<br>h. m. s. | | Decl. | | |
|---|---|---|---|---|---|---|
| W.B., 7h. 1014 | ... | 7 34 18·04 | ... | + 8° 40 20·9 | ... | (*b*) |
| Baxendell's star | ... | 7 34 49·98 | ... | + 8 39 30·1 | ... | (*x*) |
| W.B., 7h. 1029 | ... | 7 34 54·17 | ... | + 8 42 29·4 | ... | (*a*) |

Examining this neighbourhood with a 5½-feet refractor on the evening of April 1, he remarked a star (*c*) of between the eighth and ninth magnitude, and by "eine Ordinaten-construction" from a diagram then made, he judged its position for 1880·0 to be in R.A. 7h. 34m. 56·4s., Decl. + 8° 41′·4. If these places are reduced to the epoch of the *Durchmusterung* (1855·0) they will stand as follows:—

| | | m. | | R.A.<br>h. m. s. | | Decl. | |
|---|---|---|---|---|---|---|---|
| *b* | ... | 9 | ... | 7 32 56·6 | ... | +8° 43·7 | |
| *x* | ... | 9 | ... | 7 33 28·5 | ... | +8 42·8 | |
| *a* | ... | 8·3 | ... | 7 33 32·8 | ... | +8 45·8 | |
| *c* | ... | 9 | ... | 7 33 35·0 | ... | +8 44·4 | without a greater error than 0′·7. |

On April 2, at 8h., with the same refractor, not the slightest trace of *c* could be discovered, and on taking the precaution to examine the stars within a space of two minutes (time) preceding and following the place by the previous night's observation, no similar object was found: a star 10m., wanting in Argelander, showed no motion in two hours. On April 3 and 4 Prof. Schmidt was similarly unsuccessful. Baxendell's star had been compared with Bessel's two stars with the Cometen-Sucher on eighty-six evenings between 1879, December 6, and 1881, March 28 (an instance, by the way, of the scrutinising system of observation which the indefatigable astronomer of Athens is accustomed to apply in his variable-star work): on no occasion was any object noted in the place of the star *c*.

Prof. Schmidt has remarks upon this observation to the following effect: if the object had been a distant planet it would have been found on April 2, 3, and 4 close to its place on April 1. If it had belonged to the group of minor planets it would have been readily identified on one of the evenings the vicinity was examined, by means of the *Durchmusterung*, without knowledge as to the direction of motion. If it were a variable star there was a variation of light from 8·5m. to absolute invisibility in twenty-four hours, which has never been remarked in any other variable; and lastly, if it were a *Nova*, of the class to which the well-known stars of 1848, 1860, 1866, and 1876 have been assigned, its illumination is limited to the interval between the evenings of March 28 and April 1, and therefore could have extended only to four days.

Referring the places of the objects observed by Baxendell and Schmidt to the star of 8·3m., No. 1029 of Weisse's Bessel, we find—

| | | Angle of position. | | Distance. |
|---|---|---|---|---|
| For Baxendell's star | ... ... ... | 207°·8 | ... ... | 135″ |
| For Schmidt's star | ... ... ... | 153·2 | ... ... | 73 |

Fellöcker's careful work for the Berlin Chart, Hour VII., does not render any assistance in this case. One of our many amateurs might advantageously take up the systematic and frequent obser-

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vation of the neighbours of W.B. 7h. 1029. It may be ultimately found that Schmidt's star affords an extreme illustration of the laws affecting variables of the class of U Geminorum.

Can Mr. Baxendell put anything upon record as to dates when he has examined the vicinity, which may bear upon the length of invisibility of Schmidt's star?

THE COMETS OF 1810 AND 1863 (V).—At the suggestion of Prof. Bruhns new elements of the Comet of 1810 have been investigated by Herr Thraen from the ten observations made at Marseilles by Pons, who discovered the comet on August 22. We had previously orbits by Bessel and Triesnecker. The observations are unfortunately affected with considerable errors, but the following appears to be the best system of elements obtainable from them:—

Perihelion passage, 1810, October 6·23793, M.T. at Greenwich.

| | | |
|---|---|---|
| Longitude of perihelion ... ... | 63° 46′ 43″ | M. Eq. 1810·0 |
| „ Ascending node ... | 308 50 31 | |
| Inclination ... ... ... ... ... | 62 55 39 | |
| Log. perihelion distance ... ... | 9·986603 | |

Motion—direct.

We subjoin Prof. Weiss's parabolic elements of the Comet 1863 (v), discovered by Respighi at Bologna on December 28; notwithstanding their striking resemblance to those of the comet of 1810, Prof. Weiss was inclined to consider the comets different: he tried an ellipse with period of fifty-three years, but the comparison of the observations in January, 1864, was not so satisfactory as with the parabola. Michez, by direct calculation upon a month's observations, obtained a period of 109 years.

Perihelion passage, 1863, Dec. 27·76369, M.T. at Greenwich.

| | | |
|---|---|---|
| Longitude of perihelion ... ... | 60° 24 28″ | M. Eq. 1864·0 |
| „ Ascending node ... | 304 43 26 | |
| Inclination ... ... ... ... ... | 64 28 46 | |
| Log. perihelion distance ... ... | 9·887344 | |

Motion—direct.

There is perhaps room for a further and more minute discussion of the observations of 1863-64, though the result may be adverse to the idea at one time entertained that the comets are identical. There was a near approach to the Earth at the end of January, 1864 (0·18), and the perturbations from this cause will require to be taken into account in a more refined determination of the orbit. The comet was observed at Kremsmünster till February 14; Prof. Julius Schmidt sought for it ineffectually at Athens on March 4.

Probably we have, in the case of these comets, an illustration that mere similarity of orbits, even though it may be pretty close, is not to be regarded as proof of identity.

## CHEMICAL NOTES

HERR DRECHSEL claims (*Journal Pract. Chem.*) to have converted ammonium carbonate into urea by the continued action of a galvanic current, the direction of which is rapidly reversed by a self-acting commutator.

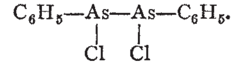
A MODIFICATION in the process for manufacturing iodine from seaweed is described by MM. Pellieux and Allary (*Bull. Soc. Chim.*), whereby, it is said, nine times more iodine is obtained than by the older process. The unburnt seaweeds are allowed to ferment in large heaps; the liquor which drains off is concentrated and dialysed in Dubrunfaut's apparatus before evaporation. The plants are burnt without further drying.

SEVERAL of the tinned preparations of the St. Louis Canning Company have been examined by Mr. Wigner (*Analyst*). The dietetic value of the corned beef is about twice that of boneless fresh beef; the cooked ox-tongues contain less salt and more nutritive matter than ordinary dried tongues. *Succotash*, an American preparation of haricot beans, Lima beans, and maize, cooked in the tin, with addition of a little fat, is recommended as a good specimen of boiled vegetable food.

THE number 197·2 is generally accepted as the atomic weight of platinum; Herr Seubert has very recently shown, in the *Berichte* of the German Chemical Society, that this number is very probably too high. As the mean of thirty-nine closely-agreeing results, Herr Seubert obtains the number 194·46. If this number is accepted the atomic weight of platinum is less than that of gold.

HERR TH. WILM has studied (*Berliner Berichte*) the action of finely-divided palladium, platinum, and rhodium, when heated in a stream of coal-gas. He finds that these metals decompose the gas, that when palladium is used a deposit of carbon takes place at some distance from the heated metals; that with platinum the carbon is deposited on the metal, but that on heating in a stream of air the carbon is burnt completely away, and the metal remains in its original form; with rhodium, however, the carbon appears to form a compound, the volume of which is considerably greater than that of the metal itself; this compound is decomposed only with difficulty, leaving metallic rhodium in a much more bulky form than that which it possessed before the experiment.

MICHAELIS AND SCHULTE describe, in *Berliner Berichte*, a new derivative of benzene, analogous with azobenzene, but containing arsenic in place of nitrogen. *Arsenobenzene*, $C_6H_5\text{—}As{=}As\text{—}C_6H_5$, produced by the action of reducing agents on $C_6H_5AsO$, forms slightly yellow coloured needles which are insoluble in alcohol and ether, and crystallise well from hot xylene. The new compound, unlike azobenzene, readily takes up two atoms of chlorine, forming—



$$C_6H_5\text{—}\underset{\text{Cl}}{\underset{|}{\text{As}}}\text{—}\underset{\text{Cl}}{\underset{|}{\text{As}}}\text{—}C_6H_5.$$

DR. A. R. LEEDS describes, in the same journal, the action of nascent oxygen, ozone, and hydrogen peroxide on benzene. Nascent oxygen was produced by the action of moist phosphorus on air in presence of benzene; if the action proceeds in sunlight a large quantity of phenol is produced, together with oxalic acid; but if in diffused daylight no phenol is formed. Phenol was also produced by the direct action of hydrogen peroxide on benzene, but when ozone acted on the same hydrocarbon, carbon dioxide, acetic, formic, and oxalic acids were produced, but no phenol was formed.

IN a preliminary note in the *Berliner Berichte*, Herr Donath states that the ordinary method of volumetric determination of oxidisable substances by titration with potassium permanganate in presence of acid may, in many cases, be advantageously replaced by an inverse process in which a neutral solution of the substance to be oxidised is added to a strongly alkaline solution of permanganate, whereby oxidation occurs with precipitation of manganese dioxide:—thus with manganese salts and with chromic salts the following actions occur:—

(1) $3MnO + Mn_2O_7 = 5MnO_2$.

(2) $Cr_2O_3 + Mn_2O_7 = 2CrO_3 + 2MnO_2$.

A METHOD for determining molybdenum in molybdates is described by Danesi (in *Atti della Accademia*), based upon the fact that hydriodic acid is decomposed by molybdenum trioxide with separation of iodine. A weighed quantity of the molybdate under analysis is mixed with hydrochloric acid and a solution of potassium iodide; the amount of iodine liberated in the reaction is determined by titration with sodium thiosulphate solution. The results are very accurate.

IN the same journal a method for determining nitrites and nitrates in the same solution is described by Piccini: the method is based on the decomposition of ferrous chloride by nitrous and nitric acids with evolution of nitric oxide, and on the greater readiness with which this decomposition is accomplished by nitrous than by nitric acid.

HERR M. GRÖGER has prepared (*Wien. Akad. Ber.*) several sulphochromites, *i.e.* salts of a chromous acid in which oxygen is replaced by sulphur; the following salts are mentioned among others:—

| | |
|---|---|
| $Na_2Cr_2S_4$ | $CdCr_2S_4$ |
| $Ag_2Cr_2S_4$ | $SnCr_2S_4$. |

THERE are about 300 known optically active carbon compounds. The specific rotatory power of but seven of these has been accurately determined for the pure substance, and for solutions of the substance in various solvents in all possible degrees of dilution; these seven are tartaric acid and ethyl tartrate, cane-sugar, dextrose, terpene from turpentine oil, nicotine, and camphor. The nature and quantity of the solvent employed exerts a marked influence on the rotatory power of the active compound; as a contribution to this subject the measurements made by Herr A. Becker (Deut. Chem. Ges. *Berichte*) of the rotatory power of asparagine and aspartic acid deserve mention. An aqueous solution of either compound exhibits left-handed rotatory powers;

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